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ABSTRACT

Noting that the design of the classroom used for early childhood and kindergarten classes can contribute in powerful ways to the education of young children, this paper applies principles of architecture to the organization and shaping of the interior classroom space. The paper maintains that five principles, when applied, create a climate of multiple opportunities and choices: (1) synthesis and creativity; (2) harmony and symmetry; (3) contrasts of light and color; (4) motion and stillness; and (5) order. The paper further argues that classrooms should be thought of as small communities within which events that take place in the everyday life of the society at large can be incorporated. A study is described, involving two Thessaloniki, Greece, kindergartens serving urban middle class families. The kindergartners were introduced to drawing prints of Da Vinci, Le Corbusier, and Dreyfuss, discussed the drawings in relation to the dimensions of the classroom and equipment, discovered relations with the use of furniture of various sizes and different objects. Data were collected through observations and videotapes. Findings indicated that the uniformity and monotony of the school space led children to indifference about the space, while creating their own micro-environments. Some children looked for quiet areas inside the class. The paper concludes that it is necessary for classrooms to be changed according to the needs and desires of the students in them. (KB)

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DEFINING ELEMENTS IN THE PLANNING OF EARLY CHILDHOOD CLASS ROOMS AS PARAMETERS IN THE DEVELOPMENT AND EDUCATION OF THE CHILD

6th European Conference
on the Quality of
Early Childhood Education

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1. Preliminary explorations

Every time I found myself in the premises of a kindergarten, and more specifically in its class rooms, I used to get the impression that this space had not been designed for pre-school age children nor had it been oriented to their needs. Even more so, I used to get the feeling that the arrangement of the kindergarten space was lacking in essential parameters of design such as creativity, synthesis of partial elements, and organisation, function and management of space .

I used to think that the planning of the kindergarten had not only been left unaffected by the theory and practice of the science of DESIGN but, also, that the kindergarten's door had not even been knocked on by the general definition of Design as such; a definition according to witch "the proper planning of space must satisfy the physical, mental and spiritual needs of the users and correspond to their requirements and wishes"; and, if the previously mentioned elements are necessary and indispensable prerequisites for the design of any other space, when it comes to the design of the space of a kindergarten they are, in addition, essential factors of the educational process. Thus, I was wondering whether naming a space as kindergarten is what defines this space as such, both in functional as well as in educational terms, or whether this definition is due only to the fact that children of pre-school age move about, play and become educated in this space.

Each time inside the school premises, when the children were not in the kindergarten, I observed the absence of liveliness, excitement, imagination, motion and vibration and, at the same time, I felt the need to relieve the space from its schoolish monotony and I had desire to make it more exciting and lively. I used to find in this situation, of the empty class rooms, similarities with the fall of curtain after a theatrical performance during which the stage scenery and the theatre space were not an organic part of the play, and where the actors were moving inside a strange and unfriendly space, thus being unable to render their role and to exploit the complete spectrum of their talent.

This lack of familiarization with the space, which of course I felt as an adult, this theatricalization of the space organization, so much removed from the everyday life and function of the kindergarten, led me to the first explorative approaches to the problem. I developed the conviction that a scientific approach of the matter, from the standpoint of the DESIGN, directed toward the issue of Early Childhood Education, would offer a new prospect to the organization and functionality of the class rooms.

With these thoughts in mind, I decided to proceed, on the one hand, to the quest for an application of a new methodology for my research, and on the other, to pave the way for some other investigations. The result of these investigations is the content of this present paper.

2. Introducing epistemological and methodological issues

My research work begain the decision not to engage myself with the rules, the prescriptions and specifications that apply to the construction of space and are mostly related to the architecture of school buildings. This area is equally interesting, if incorporated in the context of educational explorations, but we work within some other different areas, making of course some use of architectural data.

The principles to be developed below are related to architecture; however, they form a different epistemological view and definitely another scientific field, that of

the organization and shaping of the interior space on the basis of certain significant intellectual challenges for educators and children alike.

The basic principles, and at the same time challenges, of the scientific field within which I am going to move, are:

a. general principles of synthesis and creativity (artistic and applied)
b. the principle of harmony and symmetry
c. the principle of the contrasts of light and colour
d. the principle of motion and stillness
e. the principle of order.

We are going to analyze these principles later on; at this point, however, I am concerned with the reduction of these principles to the field of education, that I consider to be a primary standpoint in my approach. I have given emphasis to the previously principles, and mainly to the parameter of the contrasts in the framework of these principles, because I believe that they constitute basic factors for the exitement of the curiosity and the inquisitive disposition of pre-school age children. These are the factors which, through the exitement and the sensitization of the children, create a climate of multiple opportunities and choices, a space that points to observation, to autonomy and to the capacity for participation.

With these principles as ingredients of the organization of Early Childhood Class Rooms, the kindergarten building surpasses its material dimension and becomes, in my point of view, "an open window to the world".

Within such space, I believe that the functional, ergonomic, anatomic and anthropometric needs of children can be better satisfied, and the conditions of comfort, hygiene and security that are most appropriate for them can be created. There enters vigorously, along with the functional, organizational and technical specifications, an important factor: "QUALITY", which, for the pre-school age, is not only a mere aspect of the design of the suitable to education space, but a foundation and a conception of life. The symbolic dimension that space - especially school space - acquires as a whole composed of various elements, articles of equipment and educational instruments, adds to the general problematic a peculiarity which ought to attract attention and investigation.

The necessity for the school space to create conditions corresponding to the life and the world of adults, and also the prospects that space ought to open in view of the society of tomorrow, constitute an inseparable part of the educational and developmental process of the child. They are, we would argue, an instrument for the continuous initiation into the sphere of the child's development into an autonomous, creative personality with strong experiences and multiple interests.

In an effort to become more clear about the framework of my considerations concerning what I call defining elements of the organization of space, so mach from the point of view of education as from the point of DESIGN, I am going to give a short analytic outline of the basic principles that I have already stated earlier. I will try, for these principles, to be dealt with in a spherical manner, as partial elements of the general principle of the synthesis and creation of space and not as independent factors. It is in this way, I believe, that we can avoid missing, in the course of the analysis, those links, mutual dependences as well as conflicts that exist among the principles and which are the ones that determine the variety, the liveliness and the expressiveness of the school space.

The general principle of every creation, ***the synthesis***, is perhaps the most important parameter of the process of the design and organization of space in general, and of the space which is ment for the education of young children in

particular. This space cannot be removed and it is independent from the physical, social and cultural environment, from the real surrounding world of young children. Therefore, there becomes a necessary condition for the synthesis of space its coexistence and interaction with the place, the time and the society within it functions, both on a small as well as on a large scale.

In this way, there takes shape a diachronic framework of the elements of synthesis such as the architectural masses, the shapes and forms, the materials and colours, the lighting, the movement, the arrangement of furniture and of objects; a framework which, with some differentiations of course, encompasses common rules, references and relations. Within this framework, the children can recognize, observe and make parallelisms with corresponding syntheses in nature, in the human organism, in the universe, in art.

Acknowledging these congruities and rapports, the children of pre-school age approach the good and the beautiful as something that expresses their inner inclinations and yearnings, as something that agrees with their dispositions and their preferences at a given moment. That is, the synthesis of space does not come into conflict with the laws, the principles and the tendencies that govern the life itself and the nature of the children.

In synthesis, one discovers the harmony, the symmetry, the equilibrium, the simplicity but also their opposites, that is, the opposition, the want of symmetry, the disequilibrium, the complexity; all of which are things connected with the human life and because of this they define and shape it.

Thus, with the general principle of the synthesis and of its partial principles-elements, we can say at this point that the space of the school is not only shapes, it is not only forms and materials, not only objects and colours, not only light and shadow, but it is a whole which encompasses all these and creates the "aesthetics of the everyday life of the school/kindergarten".

Parallel to my quests of this sort, I was also preoccupied with the method for the collection of information and data. This is subject not only to its objectivity but, also, to the potential it has to record, to describe and to capture the exact items of knowledge or states inherent in objects or events.

Based on the above thesis, I tried to find - from within the so called quantitative or qualitative research - a method which would be suitable for the application of the general theses and directions of what we generally call DESIGN to the everyday reality that is lived by the children collectively, that is, in class rooms for young pupils.

As such, the purpose of this quest was to find certain items of knowledge and approaches available to us from the swelling, in our days, applications of DESIGN, that would become -in accordance with the more general Gestalt (Piaget) and Developmental (Vygotsky) strains- integrated in the functioning of the contemporary school/kindergarten for young children. This search made me to approach what we call "interpretive voice" (Spodek, p. 464). According to the observations of the previously mentioned authors, this method, which has been developing increasingly since 1980, appears to be particularly effective as a more general ethnographic-anthropological approach to phenomena or situations that are relevant to the life of small communities, like the communities of young children in the school/kindergarten.

Thus, the first thesis that emerges from within this method is that the class rooms are not considered as school rooms, but they are thought of as small communities

within which situations or, more general, events that take place in the everyday life of the society at large can be incorporated.

More specifically, the thesis of the field of DESIGN according to which it is necessary for the planning and morphology of spaces and objects to meet the mental and spiritual needs of their users ***has opened the prospect for the evolution of this thesis, so as to apply to young children***. It appeared to me that this ***evolution*** could leas us to a methodological principle which can be summarized in the position that: "The ergonomic, functional and aesthetic needs of the life and activity of young children can be satisfied, up to certain points, by elaborations and processes of a morphological nature".

3. Philosophical approaches

Before I move on to the description of my purely investigative work in the class rooms of the kindergartens, I would like to refer somewhat more extensively to one specific parameter from the ones that I have mentioned, in order to make it more comprehensible. This is the parameter of ***light*** and the concepts of lighting and of its fluctuations.

A painter will approach this parameter by means of the variations of colour, the shadings and the luminous heights so as to create a pictural atmosphere, producing depth and perspective, or rendering the metaphysical elevation on his forms (El Greco, Rembrandt, Picasso). The mechanical engineer is going to give the weight to the technical aspects and the applied effect of light, so as to create within space conditions of comfort, security, material maintenance and, most of all, an environment which, in terms of its lighting, would be appropriate for its user and for his/her quality of life and work. The architect exploits the natural and the artificial lighting so as to bring out the structures and the relations of the architectural masses as an inseparable part of his architectural proposition.

An educational proposition, however, and an educational approach to the paramater of light, inspite of its making an interdisciplinary use of these other propositions, moves in the area of communication and interaction and within conditions of contradictions among persons and things. It also moves within pedagogical rythms that spring up from within these contrasts between the luminous tensions and the shadings and affect the relations of the educational interaction.

The contrasts, for example those of colours on surfaces and masses or forms, develop rythms which are different from the rythms of movement and, as such, effect the interaction of persons and their communication, sometimes positively and sometimes negatively but, be that as it may, in a developmental way.

Thus, we say that along with the musical rythm, the rythm of movement or the architectural rythm, a ***"pedagogical rythm"*** exists within the parameter of light - the parameter with which we specify the previously mentioned principles-. This is a rythm that contains within it something from the rythm of music, something from the plastic-architectural rythm; what is more, it has its own dynamic emerging from within the dynamic of the educational interaction. We are going to name this rythm as ***"static pedagogical rythm"*** because, as an educational instrument and means, it contains states of life and, at the same time, the dynamics of the unfolding and the development of the child towards new sensitizations and future creations, reformations and discoveries.

Just as from the ancient greek *Kouros* of the static sculpture there unfolds the successive course toward the movement of the arms, legs and face, in the field of

education we have, in a parallel manner, the transformations from the concentrated pedagogical postures to movements of new rythms and to creative releases of the inherent energies.

If, in particular, we apply these views to the pre-school age, we will see that with the creation of rich alternating lighting and the play between light and shade on figures, masses, forms and colours the young children get initiated to the transformations of the objects of reality. However, in a successive manner, the children move from matter to form, from form to figurative and abstract representations, to the intensity of colour, the transformations of colour from one material to the other, and finally, to the interiorization of these states so that the phenomenon of development, of the creation of emotions, concepts and, in general, of inner states for their initiation into life can take place.

All what we have said, as an exemple, about the light apply also -in a parallel but not identical manner- to the harmony, the movement, the order and everything else that the principle of synthesis encompasses.

However, we are going to insist for a little while to the issue of light as a factor for the creation of a certain atmosphere inside schools/ kindergartens, taking an example from the use of light, shade, and half-light in the architecture of different temples and chapels from ancient times until now. The abundant light inside the greek temples reflected the desire for gods and humans alike to become part of the transparency of light and of the truth contained in it. The diffractionary entry of light, the development of shadows and of half-light as well as the methodical lessening of light in the gothic churches reflect the mystical approach to the divine myth as well as the need to inspire divine awe to the faithful. In the contemporary churches of modern architecture (Gaudi, Le Corbusier) the distribution of light and shade and the tendency to bring to the fore the interior architectural masses create an atmosphere for the self-concentration and the circumvolution of the individuals aroud their own voluptuous aesthetics, so as to go beyond their essential nature and move to the plain of genuine human ecstasy.

The examples just mentioned show, as architectural experiences, the extent to which the use, the excessive use or the attenuation of light can create some general climate inside the school. Yet, many times, we not only neglect to adopt this attitude toward light and shadow, but we even ingore it.

One first approach to this direction is the exploitation and usage of the up-to-now historical experiences we have just mentioned, so as to develop inside the school/kindergarten a proposition of synthesis. That is, to create parts/areas of abundant lighting, areas with local and functionally oriented lighting, areas with bright and dark corners as fields for individual and collective explorations or for the recognition of forms and objects under different conditions of light. In this way, the "famous" ***activity corners*** at the kindergarten won't be organized only on the basis of the use of objects but also by means of the exposure of objects and activities to a lot, a little or no light at all. In such an environment of light the objects lose or gain part their material substance and become personal, cultural and, more generally, human "symbols" for the development of affections, emotions, aesthetic events, forms, concepts, thoughts and meditations. Thus, and by means of the alternations and the fluctuations of light, the objects and the spaces acquire expressiveness and they somehow talk to the children about something else, something that extends beyond what they actually are. In this way, the children take elements from the expessive quality of the objects and create their own "quality" and "expressiveness"; and, at the same time, through the experience of differentiated lightings and shadings, the fantasy is being refined and becomes imagination, dream, myth that can be expressed and approach to the sphere of conceptual thinking.

4. Research hypotheses and methodological phases

From within all that has been previously said, we are able to formulate a framework of research hypotheses and to present analytically the methodological phases of the research that has been done.

We collected certain aspects from the area of DESIGN and we incorporated them into the field of the small communities of young children. That is, what we essentially did was to arrange some class rooms, incorporating in each some new organizational elements in order to observe the reactions and the behaviour of the children inside the newly organized environments. As it were, there took place a comparison of the already existing conditions and arrangements in early childhood class rooms with the ractions and behaviour of children in the new environmental states inside the class rooms. As we all know, the early childhood class rooms are loaded with objects and materials, by following the Montessori method, the developmental teaching or other methods. What we tried to do inside the class rooms was to arrange them by means of usages and procedures developed on the basis of the applications of DESIGN theories. These applications included the theses/processes which I will immediately refer to, from within a historico-genetic evolution from Leonardo da Vinci up to the modern era. The experiences of Da Vinci, Dürer, and Vitruvius on the relations of the human body as ratios of parts (arms, head etc.) to the whole, as well as the geometry of the human body as an exemplary harmonious system, have been part of my investigations in the form of material for play and discourse with children.

The relation of the human body to objects (tables, chairs, shelfs), space (building and road size, room and door height) as well as to the human activities (length of step in walking, running, going up the strairs; sitting on a chair, on the bed, on the ground) led me to Le Corbusier and to the ***Modulor***, system that he developed. In accordance with this system, there takes place a systematic dimensionalization of the human activities and a comparison of analogies between the human dimensions and the size of objects and architectural masses. For example, the height of chairs in relation to their uses (sitting, writing, resting) and to the height of tables, or the width of the corridors of a house as opposed to the respective width in a public building or a school.

Another development that marked the world of analogies was Henry Dreyfuss' dimensionalization, adjusted to the child and to the child's needs. In accordance with his anthropometric data, the objects used by young children ought to be designed and modelled in relation to the dimensions and activities of the children. For example, a door handle for a school door must fit to the size of the child's palm and it should be placed at a height such that will allow child to use it easily and safely.

In the course of my research in two kindergartens of Thessaloniki, these three theses/theories, which constitute the fundamental key for the planning and the design of spaces and objects, led me to the following procedure:
a. **Phase 1:** Presentation of drawing prints of Da Vinci, Le Corbusier and Dreyfuss to the children so that they could observe and examine them alone, without the provision of any information; a stage of provoking the children's interest.
b. **Phase 2:** The children asked questions and there unfolded a discourse regarding the image representations of the drawings and their relations to the dimensions of the class and its equipment.
c. **Phase 3:** Discovery by the children themselves of the above relations with the use of various pieces of furniture and of different objects (high or low chair, tables of various heights) as well as with the use of different states and postures of the children's bodies in relation to the structural elements of the space (i.e. two

children passing simultaneously through a narrow door, reaching objects on shelfs placed high on the wall).
d. Phase 4: Generalization of the previously described experiences in the form of oral propositions regarding the use and function of furniture, objects and activities.

With these four phases there was made an effort to translate the experiences of three different personalities of different historical eras into generalized concepts and reflective processes.

I consider it necessary to say that I also made use of:
1. my own direct observation
2. the video-taping and photographing of the important parts and phases of the procedure.

At this point, I also consider it necessary to say that it was not the method of the distanciation of the researcher from the research field but, rather, the method of the participant observation that was following throughout the whole procedure. We all know, of course, that there exists a serious discord between those who argue that the researcher should be objective and as distanciated from the research field as posible and those who, in our days, are increasingly supporting the point that the participation of the researcher in the work field not only allows for the collection of more information but that it also allows for the immediate transformation of this information.

5. Keys settings of the research

•Exporing Elements in the Planning of Early Childhood Class Rooms
•Quality of the synthesis of the elements of space
•Significant intellectual challenges for children
•Pedagogical rythm

6. Research data and research subproducts

The research took place in two kindergartens of Thessaloniki, one on the East and the other on the West side of the city, where, with small differences only, the children came from urban middle-class families.

There was observed the already discussed uniformity and monotony of the school space marked by the standardization of space and equipment.

This standardization was automatically leading the children to mechanistic movements within the space and among pieces of furniture. With the method of the participant observation it became clear that throughout the school day the children remained completely indifferent regarding the space while they would search for their own ways out, either by creating their own micro-environments with the use of different objects or by renaming some objects and attributing to them other uses relevant to their activities.

There was also a tendency on the part of the children to look for isolation and peace, individually or in small groups. This search for the quiet area inside the class room would, most of the times, lead them under tables or beds; it was the search for the "secret corner".

The children's own remarks, as subproducts of the research constitute a very interesting part of it. In the course of the discussion concerning the use of the chair, a four-year old boy said that the chair is needed for the children to climb on it and to stare onto the adults' eyes. The comparison of the children's chair with

that of the teacher resulted in that the teacher's chair is better, more comfortable and of course bigger. As it was also noted, the doors of the class room are an obstacle by not permitting the children to see what goes on in the rest of the school space.

7. Generalizations and extension in the field

Generalizing the previously mentioned observations and remarks, we see the need for the transformation of the school space into a plain for comparisons, discoveries and parallelisms with basic principles and relations of creation so as to provide the children with a reference framework.

The symbolic use and meaning of objects and the prism in the light of which the children cope with them produces new educational and morphological demands.

The possibility for the children to approach society, history and culture in any form of every day life opens new avenues not only for the acquisition of knowledge and experiences, but also for the creation on the part of the children of cultural goods. Young children are in a position to comprehend the messages and the information contained in space and in objects and they are able to acknowledge the synthesis of the space from its partial aspects to its "whole".

8. Ending remarks and further explorations - inquiries

It is necessary for the class room space to be transformated and changed according to the needs, requirements and desires of the children. We have an obligation to investigate and note down these requirements, so that we can offer the young child the possibility of a free development and education.

The child is an active being whose energy is based on freedom, and freedom means initiative, spontaneity, responsibility. When the school space, with its structure, will become able to direct educators and children towards such a notion, when the organization of space will become an instrument and means for the educational process, when the space can excite and fascinate the children enabling them to create conditions for a better life, only then we can say that we have offered these children the possibility to put into function and manage such a space with a prospect, an orientation towards the next day and the new concerns that this is going to bring.

Every time, on every place on earth and at each chronological moment there exists one unique relationship among preschool age children, educators, parents, society and the environment. The uniqueness of this relationship is to be found in that it constitutes a nucleus of civilization carrying its own dynamic from the past to the future. It is history that is contained in this nucleus and it creates history. And it is for this reason that we owe to find those codes which will assist us in our communication for the creation of space that will belong to the children.

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